

# Lab Highlights

NO. 458 SEPARATION OF CARBOXYLIC ACIDS ON A NEW SULFONATED RESIN HPLC COLUMN

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Cation exchange resins in the hydrogen form have been employed in a number of practical applications requiring the separation of carboxylic acids. Dilute aqueous acid mobile phases are used to suppress the ionization of the carboxylic acids; the resulting separation is believed to involve a combination of reversed phase and ion exclusion mechanisms.

Unfortunately, in many instances these resins have exhibited relatively poor mechanical properties. The resin beds cannot withstand flow rates much in excess of 1 ml/min. Backpressures, even at the recommended flow rates, are substantial, and column lifetimes are often short.

This paper will describe a new column packed with a robust sulfonated resin which overcomes many of the limitations of currently available resin columns. The new column, 7.8mm I.D. X 30cm, is capable of separating a wide variety of compounds, but it is particularly useful for the separation of low molecular weight organic acids.

The rugged packing will allow relatively high flow rates to speed separations. In order to optimize a given separation, the column can be operated at elevated temperatures with a variety of aqueous acid eluents, and it will tolerate the presence of a wide range of water-miscible organic solvent modifiers.

Examples will be shown of separations of complex mixtures of sugars and acids in foods, fermentation substrates and fermented beverages as well as some industrial and biomedical separations.

A variety of detectors may be used, including UV, absorbance, refractive index, conductivity and electrochemical. Examples will be shown to demonstrate how the selectivity of these detectors can be used to advantage in particular situations.